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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/202,267	12/09/1998	TAKAO NISHIKAWA	P3297B	2673

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EPSON RESEARCH AND DEVELOPMENT INC
INTELLECTUAL PROPERTY DEPT
150 RIVER OAKS PARKWAY, SUITE 225
SAN JOSE, CA 95134

EXAMINER

TUGBANG, ANTHONY D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 04/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/202,267

Applicant(s)

NISHIKAWA ET AL.

Examin r

Dexter Tugbang

Art Unit

3729

-- Th MAILING DATE f this communication app ars on the cover sheet with th correspondence address --

Period f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 5,11-13,15-17,21,27-29 and 31-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-10,14,18-20,22-26 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. The applicant(s) Amendment filed 1/8/02 (in Paper No. 14) has been fully considered and made of record.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. Claims 5, 11-13, 15-17, 21, 27-29 and 31-33 stand as being withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 11.

Drawings

4. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 1/8/02 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

5. Claims 18-20, 22, 23, 26 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Publication JP 5-286141, referred to hereinafter as JP'141.

Art Unit: 3729

JP'141 teaches the claimed *final product* of an ink jet printer head comprising a head base having a concave portion (chambers 12 in Fig. 2) defining pressure chambers and a plate (nozzle plate 10) in which corresponding nozzle ports 11 for discharging the ink on the head base are formed. Claims 18-20, 22, 23, 26 and 30 are interpreted as Product-by-Process Claims. As such, Applicants are referred to MPEP § 2113 which states:

“[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

Regarding Claim 18, the limitations drawn to the green sheet having a relief pattern and the coating and stripping steps have not been given any patentable weight as these limitations do not patentably further limit the claimed product of the ink jet head. The green sheet is not considered even part of the finished product of the ink jet head.

Regarding dependent Claims 19, 20, 22, 23, 26 and 30, the method limitations drawn to the green sheet, as well as imparting energy and a lithographic method, have also not been any patentable weight as these limitations do not patentably further limit the claimed product of an ink jet head.

Claim Rejections - 35 USC § 103

6. Claims 1-4, 6, 7, 14, 18-20, 22, 23 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trueba 5,560,837 in view of Japanese Patent Publication JP 6-122203, referred to hereinafter as JP'203.

With regards to Claims 1, 2, 6, 7 and 14, Trueba discloses the claimed manufacturing method (noting Figures 2A-2L) comprising: manufacturing a green sheet of a glass substrate material 201 by forming a resist layer 209 having a relief pattern of a recess surrounding a central pillar (shown in Figure 2E); photolithographically etching the relief pattern on the green sheet substrate (shown in Figures 2F-2J); coating a solidifying material 217 to form a head base (shown in Figure 2K); stripping off the head base from the green sheet by peeling off the green sheet (see block 333 in Fig. 3); and forming the head base with the plate and a nozzle port with the use of the central pillar 205', 211' on the green sheet prior to stripping the green sheet.

With regards to Product-by-Process Claims 18-20, 22, 23 and 30, if Applicants believe that the product can only be made by the recited process, then Claims 18-20, 22, 23 and 30 are alternatively rejected by Trueba for the same reasons of Claims 1, 2, 6, 7 and 14 stated above.

Regarding Claims 1 and 18, Trueba does not teach that the head base further comprises a concave portion defining ink pressure chambers.

JP'203 shows that in the art of ink jet print heads, a conventional and notorious well known head base (in Fig. 4) can comprise both a plate 60 with nozzle ports 50 and a concave portion (pressure chambers 4A, 4B, 4C in Fig. 5) on which the plate is mounted. Such an assembly forms a conventional head base for an ink jet head, which purposely ejects ink.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the head base of Trueba with a concave portion of pressure chambers, as taught by JP'203, to form a conventional head base for an ink jet print head which positively ejects ink onto a medium of paper.

Regarding Claims 3 and 4, it would have been an obvious matter of engineering design choice to choose any desired substrate material of the green sheet, since applicants have not disclosed that the claimed green sheet substrate material of *silicon* or *quartz glass* solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the glass substrate material taught by Trueba.

7. Claims 8, 9, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trueba in view of JP'203, as applied to claims 1 and 18 above, and further in view of Moynihan 5,640,184.

Trueba, as modified by JP'203, teaches the claimed manufacturing method as previously discussed. The modified Trueba method does not teach that the head base is made of a thermoplastic substance, more specifically a hydrated glass.

Moynihan suggests that a head base can be made from thermoplastic materials of alumina or *glass* to provide the head base material with a thermal expansion coefficient compatible with adjacent components to be used in operation of an ink jet print head (see col. 14, lines 10-18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the head base of Moynihan by forming the head base with thermoplastic materials of glass, as taught by Moynihan, to positively provide a head base with a thermal expansion coefficient compatible with adjacent components to be used in the operation of the ink jet print head.

It is noted that the Applicants recite specific material limitations in Claims 9 and 25, i.e. that the glass is "hydrated". However, such limitations must result in a manipulative difference in the recited process steps as compared to the prior art. In this instance these material

Art Unit: 3729

limitations are held to be obvious and not given patentable weight in these method of manufacturing claims as such limitation(s) do not result in any difference in the *claimed* manufacturing process.

8. Claims 10 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trueba in view of JP'203, as applied to claims 1 and 18 above, and further in view of Sachdev et al 5,470,693.

Trueba, as modified by JP'203, teaches the claimed manufacturing method as previously discussed. The modified Trueba method does not teach that the relief pattern has a recess with a tapered shape. The recess of Trueba, which surrounds a central pillar, appears to have straight vertical walls.

Sachdev teaches a lithographic process in which a resist relief pattern 7 (in Fig. 1C) is formed with a tapered shape. Such an advantage of the tapered profile allows the member being etched under the resist relief pattern to retain a good image profile structure having a high resolution (see col. 8, lines 46-54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resist relief pattern of Trueba by forming a tapered shape, as taught by Sachdev, to advantageously form the layers being etched under the resist relief pattern to retain a good image profile structure having a high resolution.

Response to Arguments

9. Applicant's arguments filed 1/8/02 have been fully considered but they are not persuasive.

Art Unit: 3729

In regards to the merits of JP'141, applicants contend that JP'141 does not teach a concave portion. The examiner traverses because JP'141 shows the concave portion of the head base in Figure 2, i.e. pressure chambers 12.

Regarding the claimed "concave portion" as applied to the merits of Trueba, the arguments are now considered moot in light of the teachings of JP'203.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dexter Tugbang whose telephone number is 703-308-7599. The examiner can normally be reached on Monday - Friday 9:00 am - 5:30 pm.

Art Unit: 3729

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3590 for regular communications and 703-305-3588 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0858.

adt
March 28, 2002

A handwritten signature in black ink, appearing to read 'Peter Vo', with a long horizontal line extending to the right.

PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700